

## The Costs and Benefits of Growth: Lawrence, Kansas, 1990-2003

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### Abstract

Since 1990 employment in the city of Lawrence, Kansas has grown by 34 percent, nearly three times as fast as the state as a whole. Such rapid growth both creates economic benefits for residents and increases the cost of city services. This paper shows that the main beneficiaries of rapid growth were homeowners, who realized capital gains because of the increasing real estate values. Local workers experienced little or no improvement in relative wage levels or reduced chances of unemployment because job growth resulted in substantial population migration. On the cost side, city expenditures nearly doubled in real terms since 1990. This rise in spending was financed primarily through increased sales tax revenues and higher charges for city services. Thus the burden of increased spending was distributed more widely than the benefits of rising property values. The extent to which the rise in city expenditures is directly attributable to increased population cannot be determined without further investigation into the changes in the quality of city services provided.

### Introduction

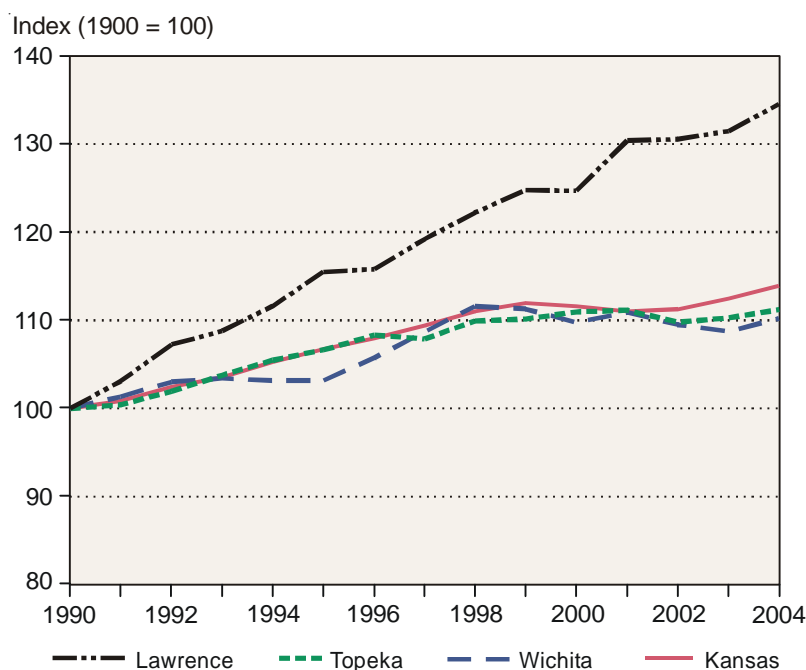
Few local political issues are as contentious as those that revolve around economic development policy. Economic development officials compete actively to attract new businesses and retain existing ones, often by offering tax abatements and other financial incentives. Many citizens, however, believe that these incentives are too large, and the costs associated with the resulting population growth fall disproportionately on current residents.

Despite, or perhaps because of, the highly contentious debate about economic development, much of the discussion takes place with little reference to the facts. This article examines the experience of one community, Lawrence, Kansas, over the period since 1990.

Over the past several decades Lawrence has experienced relatively rapid growth, expanding much more quickly than the state as a whole, and outpacing larger cities like Topeka and Wichita. Figure 1 compares employment growth in Lawrence with that in Topeka, Wichita, and the state as whole from 1990 through 2004. While employment in the state grew by about 13 percent over this period, Lawrence's employment grew more than 30 percent. In contrast, Topeka and Wichita both experienced employment growth slightly below that of the state.

What are the costs and benefits of Lawrence's rapid growth? Economic development strategies begin from the premise that attracting new businesses and new jobs is on balance a good thing for a community. But population growth also imposes costs on the community. Both businesses and residents require a range of city services, and increased services cost more money to provide. Moreover, population growth imposes a variety of less tangible impacts on current residents through increased congestion, reductions in open space, and changes in the built environment.

**Figure 1**  
Employment Growth in Lawrence, Wichita, Topeka, and Kansas, 1990-2004



Sources: U.S. Bureau of Labor Statistics, Current Population Survey.  
Note: Employment in each location is shown relative to its 1990 level

To disentangle these impacts and attempt to quantify them, it is necessary to begin by laying out a more formal conceptual framework. As the next section makes clear, the impacts of job creation will be reflected not just in labor markets, but in housing prices and the cost of city services. After laying out this chain of events, I turn to the evidence to document the magnitudes of these effects in Lawrence.

## Conceptual Framework

Imagine that because of the attraction of a new employer or expansion of an existing employer, 20 new jobs are created in the community. These positions can be filled by workers already employed in the community, by residents of the community who are currently unemployed or out of the labor force, or by migrants from outside the community.

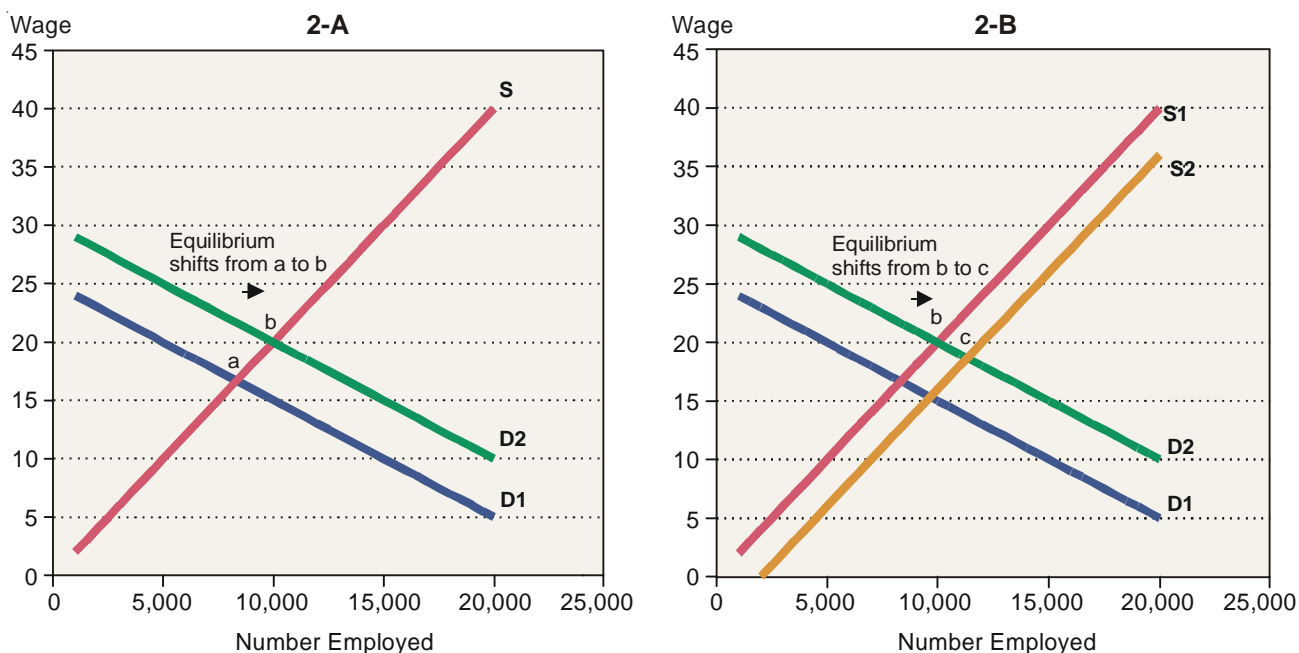
In the first case, the movement of workers creates new vacancies that must be filled from the remaining two sources. Thus, ultimately an increase in jobs will result in some combination of reductions in unemployment (as unemployed or out of the labor force workers take jobs), and increases in the population as new workers move into the community. If there is a large pool of unemployed workers available or if workers from other communities are willing to migrate from other places, then rising employment need not increase

wages in the community. If, however, these sources of relatively “elastic” labor supply are not available, then local wages may need to rise to induce more workers to enter the labor force either from within the community or from more distant places.

The direct effects of increased employment in turn result in additional demand for locally produced services that generates further employment growth. These multiplier effects arise because of spending on locally produced goods and services by the new business and its employees. The resulting increase in sales will induce local providers of these goods and services to expand their workforce to meet additional demand.

The labor market effects of new job creation are illustrated in Figure 2. In figure 2-A the local labor supply is labeled “S.” The supply curve shows the amount of labor that local residents will supply as a function of the wage rate. It is upward sloping because at higher wages those already working will supply more effort, and some non-workers will be induced to enter the labor force. Curve D1 denotes the initial demand for labor. It slopes downward, showing that employers will demand more labor at lower wages. Curve D2 denotes labor demand after the addition of 20 new jobs. As a result of the shift from D1 to D2, employment rises and wages rise. In figure 2-B the response of non-residents to the improved employment conditions in Lawrence causes the supply curve to

**Figure 2**  
**Labor Market Effects of New Job Creation**



shift to the right, from S1 to S2. As a result of this migration response, employment increases and wages decline.

Beyond its labor market effects, new job creation has several other positive impacts on the community. To the extent that new jobs are filled through migration into the community or a reduction in migration out of the community, job creation will contribute to increased housing demand. Higher housing demand will tend to increase the price of the existing stock of housing, and encourage new construction. Local government revenues will rise as a result of increased housing values and through increased local retail sales caused by population growth.

New job creation also imposes a variety of direct costs on the community. The new or expanded business may require additional city services, and new residents attracted to the community will place additional demands on sanitation, water-supply, roads, schools, and public-safety provision. All of these will necessitate increases in city spending.

### Impacts on the Local Labor Market

As Figure 1 illustrated, over the past decade and a half employment in Lawrence grew much faster than it did in Kansas generally or in other larger cities such as Topeka and Wichita. Where did new labor market entrants come from? We cannot directly link migration trends with employment growth, but a variety of labor market evidence indicates that the rapid expansion of employment was met largely by migration into Lawrence. Rapid employment growth has not produce an increase in relative pay in Lawrence, or reduced the local unemployment rate.

In 1990, average annual wages in Lawrence were \$16,248—equivalent to 70 percent of the U.S. average, or 80 percent of the statewide average. By 2002, wages in Lawrence had increased to \$23,124, but this growth had not kept pace with wage trends nationally or in the state. In 2002, average wages in Lawrence had slipped to just 66 percent of the national average and had fallen to 77 percent of the statewide average (see Table 1).

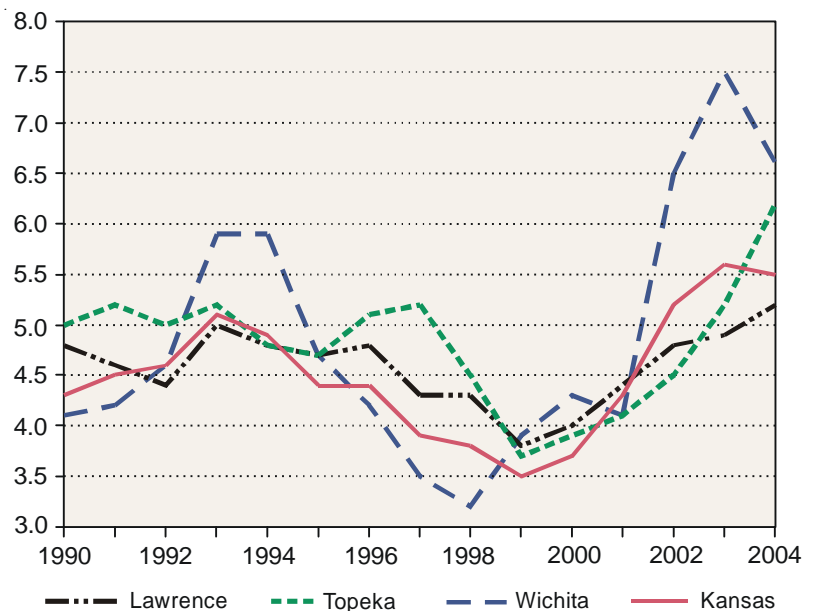
**Table 1**  
**Average Wages in Lawrence, Topeka, Wichita, Kansas, and the U.S., 1990 and 2002**

	Average Wage 1990	Average Wage 2002	Average Annual Rate of Growth	Relative Wage (U.S. = 100)	
				1990	2002
Lawrence	\$16,248	\$23,124	3.21	69.91	65.91
Topeka	\$20,459	\$29,526	3.33	88.04	84.16
Wichita	\$22,670	\$31,788	3.07	97.55	90.61
Kansas	\$20,173	\$30,169	3.66	86.80	86.00
U.S.	\$23,239	\$35,082	3.74	100.00	100.00

Source: 1990-2001 from Harvard Business School, Institute for Strategy and Competitiveness, Cluster Mapping Project; 2001-2002 from U.S. Census Bureau, County Business Patterns.

Note: Average wage is the ratio of total annual payroll and total employment of all private businesses.

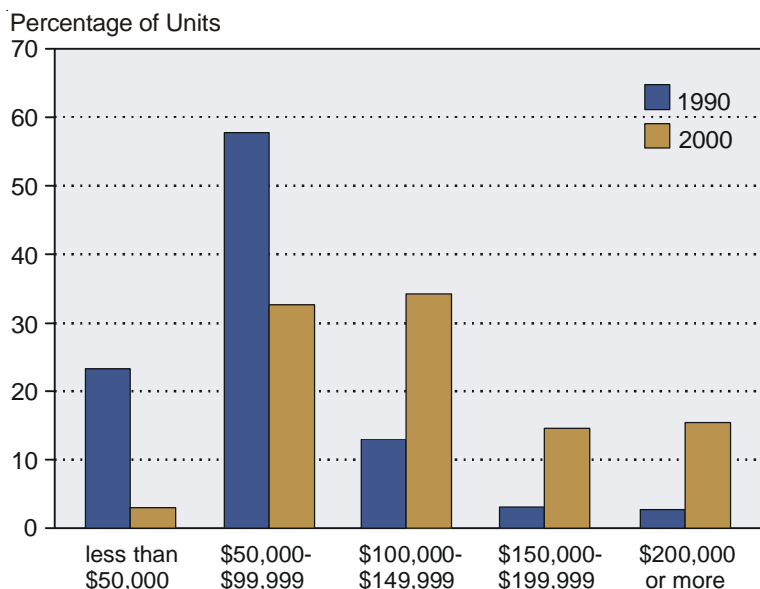
**Figure 3**  
**Unemployment Rate in Lawrence, Topeka, Wichita, and Kansas, 1990-2004**



Sources: US Bureau of Labor Statistics, Current Population Survey.  
Note: Average annual unemployment rates.

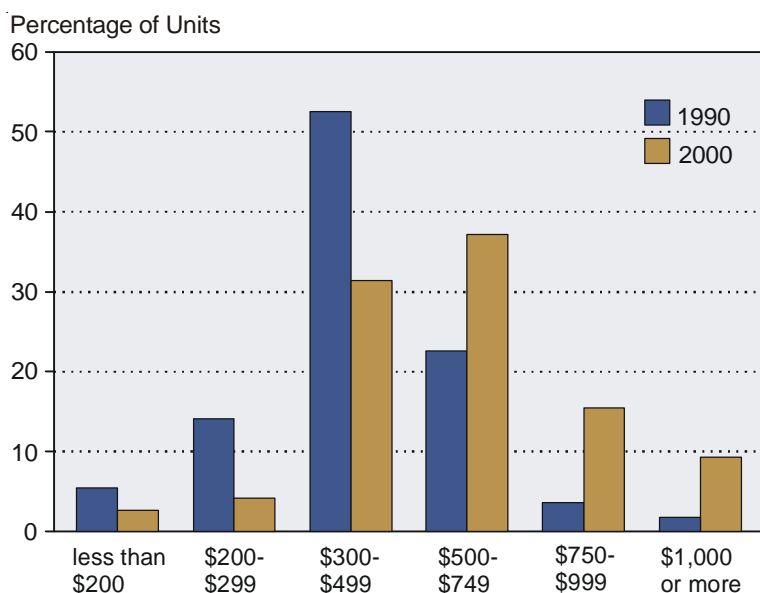
Similarly, Lawrence's unemployment rate has closely tracked movements in the state unemployment rate since 1990 (see Figure 3). Thus, the rapid growth of employment did not substantially benefit unemployed or out-of-the-labor-force workers in Lawrence. Rather, growth in employment has been met almost entirely

**Figure 4**  
Distribution of Values of Owner-Occupied Housing,  
Lawrence, Kansas, 1990 and 2000



Sources: U.S. Census Bureau, 2000 Population Census, Table DP-1; and 1990 Population Census Summary Tape File 3.  
Notes: In 1990 there were 9,489 owner occupied housing units; in 2000 there were 12,347.

**Figure 5**  
Distribution of Gross Rent for Renter-Occupied Units,  
Lawrence, Kansas, 1990 and 2000



Sources: U.S. Census Bureau, 2000 Population Census, Table DP-1; and 1990 Population Census Summary Tape File 3.  
Notes: In 1990 there were 12,963 renter occupied housing units; in 2000 there were 16,999.

through the migration of labor into the community.<sup>1</sup>

## Impacts on Local Real Estate Markets

If rising labor demand did not produce rising pay and falling unemployment for local workers, it did contribute to a 31 percent increase in population, which fueled increased housing demand. The result was a marked rise in the price of residential real estate. Unlike labor, which is relatively mobile, land is fixed. As population increases the demand for land, the result is rising prices for this fixed resource.

Data from the 1990 and 2000 Censuses document the sharp rise in average home values in Lawrence over this period. Figure 4 plots the distribution of values of owner-occupied residences in both years. In 1990 only about one in five houses in Lawrence was valued at more than \$100,000. By 2000, more than two-thirds of houses were worth more than \$100,000. As a result of this shift, the median value of owner occupied housing rose from \$68,500 to \$118,400 over the 1990s.

How one experiences the effect of rising housing prices depends on whether one is a homeowner or not. For new entrants or those who do not own their residence, rising housing prices are a negative, raising the cost of living. For homeowners, however, while the implicit cost of housing rises, the major effect is that the value of their assets rises resulting in capital gains as the value of their real estate assets rise in value.

The divergence between the costs of housing per se and the capital gains associated with property ownership is evident in the slower growth of rental rates over the 1990s. Again using data from the 1990 and 2000 censuses, it is apparent that the rental rates rose more slowly than did house prices (Figure 5).<sup>2</sup> Indeed the median rent increased from \$415 per month to \$555 per month (an increase of only 33 percent as compared to the 77 percent increase in median house prices). In general rents will increase less than the prices of owner-occupied real estate

because renters do not expect to capture any of the expected future capital gains associated with a booming real estate market.

The past 15 years have seen a boom in real estate prices not just in Lawrence but in other communities as well. So separating that part of rising prices that is attributable to Lawrence's above average growth requires establishing some baseline of comparison. One possibility is to compare house prices in Lawrence with those in other, more slowly growing communities.

Figure 6 compares housing prices in Lawrence with those in Kansas and with Topeka and Wichita, as well as for the nation as a whole. Between 1990 and 2004 house prices in Lawrence increased by 107 percent. But even in slowly growing Wichita prices increased 63 percent over the same period, and prices rose more quickly in Topeka, and statewide. These comparisons suggest that had Lawrence grown more slowly, housing prices would have increased between 13 and 26 percentage points less than they actually did.

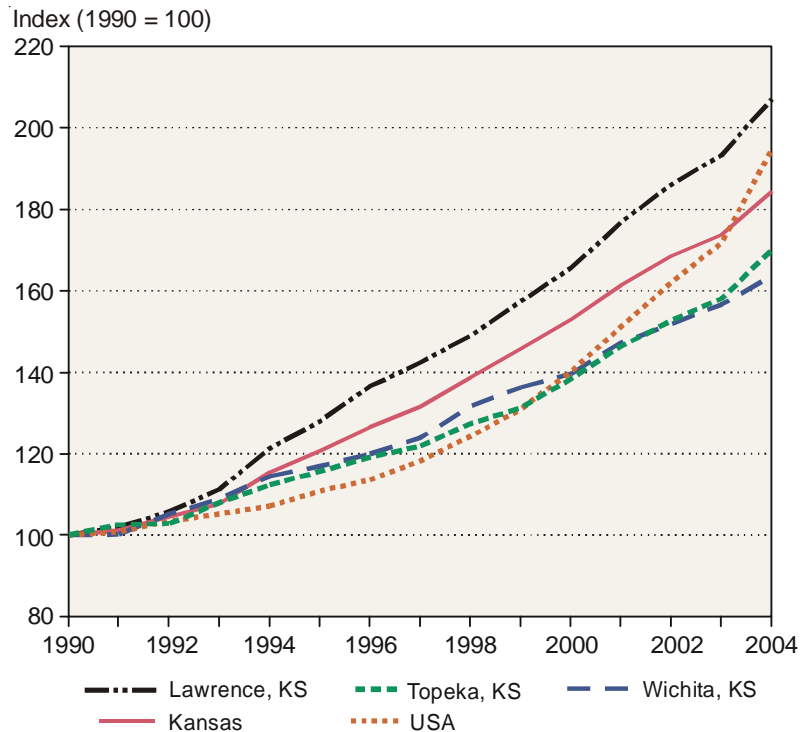
For the owner of a house valued at \$68,500 in 1990—which was the median value of owner-occupied units in that year—this difference in growth rates translates into a difference of between \$16,000 and \$30,000 dollars in capital gains. Obviously the benefits of these capital gains were not distributed equally, since only property owners participated in this increase.

### Impacts on the Cost of Local Government

As local population increased, the costs of providing city services also increased substantially. Adjusting for inflation, city expenditures approximately doubled between 1990 and 2003, increasing substantially faster than city population. This growth took place in both general fund expenditures, city services supported primarily by tax revenue, and in enterprise fund expenditures, city services such as water and sewers that are supposed to be funded by fees charged to their users.<sup>3</sup>

Adjusted for inflation, general fund expenditures more than doubled, rising from \$29.5 million in 1990 to \$61.3 million in 2003. Since population increased by 31 percent over these years, this increase resulted in a

**Figure 6**  
**Housing Price Indexes in Lawrence, Topeka, Wichita, Kansas, and U.S., 1990-2004**



Sources: Office of Federal Housing Enterprise Oversight, House Price Index.  
Notes: Annual changes in house prices are computed each quarter based on repeat sales of sample property. I have used changes from the 3<sup>rd</sup> quarter of each year to calculate the change in overall housing prices.

substantial rise in per capita costs of government. In 1990 city expenditures worked out to \$449 per person (in 2003 prices); by 2003 expenditures had risen to \$713 per head.

More insight about this rise in general fund expenditures can be obtained by looking at separate categories of expenditures, as detailed in Table 2 (pg. 28). There was relatively little increase in per capita costs for public works, debt service, or capital outlays, suggesting that growth did not result in significant increases in the cost of these activities. On the other hand, increases in spending on public safety (\$115 per capita), and general government (\$81 per capita) account for the bulk of the rise in costs of general fund expenditures.

Enterprise fund expenditures are a substantial share of the total cost of government. In 2003 expenditures for services covered by enterprise funds totaled \$35.7 million, or about 58 percent as much as general fund expenditures. Water and sewer, and sanitation are by far the largest component of these expenditures,



**Table 2**  
**Real General Fund Expenditures and Real General Fund Expenditures per Capita,**  
**Total and by Function, City of Lawrence, 1990-2003**

**Panel A: Real Expenditures**

Year	GDP Deflator	Total Expenditure	Debt Service	General Government	Public Safety	Public Works	Capital Outlay	All Other
1990	77.0	\$29,455,853	\$5,870,909	\$4,042,472	\$8,286,046	\$4,349,032	\$565,007	\$6,342,386
1991	79.7	31,621,871	4,888,563	4,747,729	10,349,298	4,470,358	1,044,304	7,165,922
1992	81.5	34,077,906	5,046,464	5,579,663	10,848,766	4,685,633	1,359,155	7,917,380
1993	83.4	31,259,053	4,273,441	5,131,128	10,467,695	5,027,304	1,276,874	6,359,484
1994	85.2	33,988,499	4,405,522	4,281,491	11,685,327	4,693,431	2,839,865	8,922,728
1995	86.9	41,797,583	4,741,643	4,701,816	12,509,643	4,686,969	5,708,328	15,157,511
1996	88.5	44,365,453	5,589,298	4,879,114	13,238,545	4,836,799	4,242,190	15,821,697
1997	90.0	49,771,749	7,445,335	6,243,384	15,355,925	5,263,743	4,777,453	15,463,363
1998	91.0	53,241,602	8,247,889	6,867,633	16,105,607	5,062,037	4,753,157	16,958,436
1999	92.3	49,261,663	7,400,439	7,516,705	16,172,347	5,164,168	4,462,388	13,008,003
2000	94.3	52,552,815	7,732,772	8,537,267	16,962,385	5,603,867	5,133,407	13,716,524
2001	96.6	59,260,892	8,244,696	13,843,520	17,971,069	5,916,690	4,050,999	13,284,917
2002	98.2	59,276,827	8,507,077	11,486,998	19,768,839	6,526,900	3,373,608	12,987,013
2003	100.0	61,307,127	9,308,568	12,286,275	20,760,197	6,554,869	1,690,388	12,397,218

**Panel B: Real Per Capita Expenditures**

Year	Population	Total Expenditure	Debt Service	General Government	Public Safety	Public Works	Capital Outlay	All Other
1990	65,608	\$449	\$89	\$62	\$126	\$66	\$9	\$97
1991	66,794	473	73	71	155	67	16	107
1992	68,017	501	74	82	160	69	20	116
1993	69,203	452	62	74	151	73	18	92
1994	71,316	477	62	60	164	66	40	125
1995	74,784	559	63	63	167	63	76	203
1996	77,325	574	72	63	171	63	55	205
1997	79,190	629	94	79	194	66	60	195
1998	80,843	659	102	85	199	63	59	210
1999	81,560	604	91	92	198	63	55	159
2000	80,098	656	97	107	212	70	64	171
2001	83,495	710	99	166	215	71	49	159
2002	85,282	695	100	135	232	77	40	152
2003	86,040	713	108	143	241	76	20	144
Change 1990-2003		\$264	\$19	\$81	\$115	\$10	\$11	\$47

Sources: City of Lawrence, Comprehensive Annual Financial Report for 2000 and 2003.

accounting for 88 percent of enterprise expenditures in 2003, and are the only categories of expenditures for which historical data are readily available. Between 1990 and 2003 expenditures for waters and sewers and sanitation adjusted for inflation increased from \$17 million to \$31.7 million an increase of 81 percent. In

per capita terms this is an increase of \$98, from \$259 per person in 1990 to \$357 per person in 2003. Throughout this period spending on these two services grew at nearly the same rate, so sanitation accounted for approximately the same share of the total in 1990 (25 percent) as it did in 2003 (26 percent).

**Table 3**  
**Real Revenues and Real Revenues per Capita Total and by Source, City of Lawrence, 1990-2003**

**Panel A: Real Revenues**

Year	Total	Taxes			Inter-governmental Transfers	Licenses and Permits	Charges for Services	All Other
		Total	Real property	Sales				
1990	\$30,255,940	\$17,541,415	\$8,788,283	\$3,996,808	\$5,066,178	\$354,503	\$957,894	\$6,335,950
1991	33,119,869	20,039,780	8,122,343	7,763,673	6,914,907	355,617	990,792	4,818,772
1992	33,370,507	20,334,674	8,820,214	7,757,330	7,546,686	451,057	1,188,394	3,849,696
1993	34,570,355	22,088,133	9,165,148	8,732,022	7,241,569	499,323	1,123,985	3,617,345
1994	36,286,584	23,661,878	9,515,958	9,298,871	7,349,464	723,909	1,202,912	3,348,421
1995	48,537,538	24,608,093	9,959,341	9,893,589	16,865,204	570,986	1,871,724	4,621,531
1996	49,083,618	24,055,018	9,182,186	9,752,992	18,131,142	758,187	1,923,911	4,215,359
1997	53,254,929	24,739,830	9,701,193	10,138,478	19,074,080	594,655	4,243,566	4,602,798
1998	55,791,938	25,948,925	10,412,206	10,747,068	19,106,193	675,254	4,379,648	5,681,918
1999	51,585,107	26,873,905	11,078,550	11,037,308	15,220,730	715,731	3,317,203	5,457,538
2000	55,326,850	28,814,666	12,554,885	11,300,405	16,402,846	628,976	3,504,886	5,975,475
2001	60,285,723	29,886,067	13,222,431	11,384,264	20,136,991	699,425	4,277,804	5,285,436
2002	57,522,063	31,103,841	14,542,943	11,158,202	16,410,691	799,927	4,590,545	4,617,060
2003	61,501,631	32,656,686	15,814,366	11,392,376	17,248,387	1,024,587	4,534,620	6,037,351

**Panel B: Real Per Capita Revenues**

Year	Total	Taxes			Inter-governmental Transfers	Licenses and Permits	Charges for Services	All Other
		Total	Real property	Sales				
1990	\$46	\$267	\$134	\$61	\$77	\$5	\$15	\$97
1991	496	300	122	116	104	5	15	72
1992	491	299	130	114	111	7	17	57
1993	500	319	132	126	105	7	16	52
1994	509	332	133	130	103	10	17	47
1995	649	329	133	132	226	8	25	62
1996	635	311	119	126	234	10	25	55
1997	672	312	123	128	241	8	54	58
1998	690	321	129	133	236	8	54	70
1999	632	329	136	135	187	9	41	67
2000	691	360	157	141	205	8	44	75
2001	722	358	158	136	241	8	51	63
2002	674	365	171	131	192	9	54	54
2003	715	380	184	132	200	12	53	70

Sources: City of Lawrence, Comprehensive Annual Financial Report for 2000 and 2003.

Without historical data on other enterprise funds it is not possible to precisely calculate the increase in total city spending. But even if one assumes that other enterprise funds did not grow at all, the total of all city spending – general fund and enterprise funds combined – would have increased at least 89 percent

since 1990. If the other enterprise fund expenditures had grown at the same rate as water and sewer and sanitation expenditures, then total spending would have increased by 97 percent in real terms.<sup>4</sup>

Without further evidence we cannot link these increases in government expenditures directly to rising

population. In part rising expenditures may reflect an increase in the quantity or quality of services provided, or they may reflect a general increase in the relative cost of government provided services that are not directly related to increased population. To identify the part of rising expenditures attributable to growth per se, we would need to establish what the increase in the government spending would have been had population growth been slower. Establishing this “counterfactual” cost estimate is a complicated matter that is beyond the scope of the present analysis. Data on costs of government in other communities, however, provide some baseline for comparison.

Despite increased city spending in Lawrence, the cost of local government services remained below that in Topeka (\$748 per capita) and Wichita (\$1,269 per capita) in 2003. So it is possible that some of the growth in costs of government in Lawrence reflects a process of catching up in terms of provision of city services. It is certainly the case that in the early 1990s Lawrence’s spending on public safety was, in per capita terms, well below the levels in Topeka and Wichita. In 1994 (the first year data was available these other cities) Lawrence spent \$164 per capita on public safety while Topeka spent \$284 and Wichita \$212. Without measuring the level of service provided, however, it is difficult to tell whether the subsequent convergence in spending reflects an increase in the level of safety in Lawrence, or is a consequence of rising population.

While the expenditure data indicate that the costs of local government have risen substantially in Lawrence, we must turn to data on revenues to understand how the burden of these rising costs has been distributed. Increased enterprise fund spending was financed largely through increased fees charged to users. The sources of increased general fund expenditures are detailed in Table 3 (pg.29) in both absolute and per capita terms. The column labeled “intergovernmental transfers” consists of a variety of items, but the primary source of these funds is a countywide sales tax that was enacted in 1995.

The two major sources of funds and the two primary sources of growth in revenues over this period are taxes and intergovernmental transfers. A number of different sources contribute to the city’s tax revenues, but the two largest sources are property taxes and sales taxes. In 1990, property taxes contributed 29 percent of government revenues. By 2003, their share in the total had fallen to 25.7 percent. In per capita terms, property taxes increased \$50, from \$134 to \$184 (in 2003 prices) between 1990 and 2003, while sales tax revenues increased \$72 dollars per capita and intergovernmental transfers increased by \$123 per capita. Thus, it seems reasonable to conclude that much of the burden of the

rising cost of government was borne by consumers, through the sales tax, rather than by homeowners, through rising property taxes.<sup>5</sup>

## Conclusion

Over the past decade and a half Lawrence has experienced much more rapid growth than the state of Kansas or other large communities in the state. The primary beneficiaries of this growth have been local property owners, who have seen house prices rise considerably faster than the state as a whole. On the other hand, the community’s relatively rapid growth has not produced major gains for workers. Local wages have actually grown somewhat more slowly than wages in other communities and the state, while the unemployment rate has closely tracked the statewide rate.

Growth has been associated with a pronounced increase in the costs of local government services. Even after adjusting for inflation, local government spending has approximately doubled over the period, far outpacing the growth in population. While property owners have been the main beneficiaries of rapid growth, the share of rising government costs borne by property holders has been relatively small. Rather, the bulk of rising costs have been covered from sales tax receipts, and charges for city services such as water and sanitation. Thus, the costs of government have been spread more widely among city residents generally (whether or not they own property) and non-residents who shop in the city.

At this point it is premature to draw any conclusions about the relative size of the costs and benefits of growth. In particular, without better information about changes in the level of service provided by city government it is risky to draw conclusions about the extent to which rising expenditures can be treated as the consequence of growth per se, rather than increased discretionary expenditures designed to increase the quality or quantity of city services. What is clear, however, is that the costs of general government and public safety have risen substantially with increasing city size, and further examination of the reasons for this growth would be of considerable interest.

## Acknowledgements

Ed Mullins, Finance Director of the City of Lawrence, kindly assisted me in interpreting data in the City’s Comprehensive Annual Financial Report, and supplied me with historical data on enterprise fund expenditures. I thank him for this invaluable assistance. In addition, I am indebted to David Burress, Susan Mercer, Genna Hurd, and Steven Maynard-Moody for



their helpful comments on an earlier version of this paper. I am solely responsible, however, for any remaining errors.

### Notes

1. This observation should not be interpreted to mean that there were no benefits to local residents arising from the rapid expansion of employment. In a community with slowly growing employment some current workers might well be obliged to migrate elsewhere in search of employment opportunities. To the extent that rapid growth makes such migration unnecessary local residents' welfare may be said to have improved.
2. In Lawrence, rental properties were overbuilt in this period. Excess capacity contributed to the small rise in rental rates and reduced capital gains for owners of rental properties.
3. Other enterprise fund expenditures besides water and sewers are sanitation, parking, storm water, and the municipal golf course.
4. Some growth in other expenditures seems likely since the golf course was not established until the mid-1990s.
5. Upendran and Darling (2004) report that the retail pull factor in Lawrence in 2003 was 1.08, indicating that retail sales tax collections in the city were 8 percent greater than its share of the state population. Thus, it is possible that reliance on sales tax revenue in effect spread the rising cost of government to non-residents. But because retail pull-factors do not adjust for difference in community spending levels no firm conclusions can be drawn about the extent to which costs were actually shifted.

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